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# waste site cleanup

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## Audit and Enforcement Update for January 2002

### Audit Findings for January 2002:

DEP BWSC issued 16 Notices of Audit Findings (NOAFs) in January 2002. NOAFs of particular significance in January include:

1. Following an audit of a Phase I-Initial Site Investigation, Tier Classification, and Class B-1 Response Action Outcome (RAO) Statement, DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON). DEP requested an Audit Follow-up Plan to conduct additional response actions.

The site is located on a 27-acre property leased for light industrial, warehousing, and distribution uses. A river is located adjacent to the property. The potential release source area includes foundry sand in an unlined landfill that was reported to include 90% foundry sand, 5% coal ash, 5% paint, plating sludge, plating rinsewaters, bromide salt baths, solvents, and cutting oils. Electroplating waste has been identified in the adjacent river. DEP was notified of a release in 1985.

Between 1996 and 1997 a Phase I-Initial Site Investigation (PHI) was conducted, which included sampling of soil, sediment, and groundwater media. Surface water was not sampled. The PHI, and associated Tier II Classification and LSP Evaluation Opinion were submitted in 1997. The PHI recommended continued groundwater sampling for two to three years to ensure continued reduction of contaminant concentration levels.

Two monitoring wells were sampled in May 1998, and five wells were sampled in August 1998. Seven Geoprobe wells were installed in 1997, and soil and groundwater samples were collected. Groundwater, identified at a depth of 5 feet below grade, was determined to flow south toward the river at approximately 23 feet per year. The PHI report included data collected in 1985 indicating sediment contamination by chromium from 64 to 410 milligrams per kilogram (mg/kg).

In December 1998, DEP received a Class B-1 RAO with a Method 1 risk

characterization. No remediation was conducted. The PHI was used to support the RAO. Several elements of a risk characterization were not included, such as any identification of exposure points or exposure point concentrations (EPCs). Maximum concentrations of contaminants in groundwater include tetrachlorethylene at 18 micrograms per liter (ug/l), trichloroethylene at 3 ug/l, dichloroethylene at 90 ug/l, vinyl chloride at 82 ug/l, and barium at 4,700 ug/l. Units were not identified for soil contaminants, including acetone and vinyl chloride. The extent of release was also not defined.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. The omission of the following: a site history, identification of possible source areas, identification of potential receptors, chains of custody laboratory reports, or indication of where samples were collected. These omissions indicated to DEP that the performance standard for a PHI report had not been met;
- b. The use of a method 1 risk characterization for sediment impacts; and the failure to identify exposure points, exposure point concentrations, or define the nature and extent of release indicated to DEP that the requirement to meet the RAO performance standard had not been met; and
- c. Failure to provide notice to public officials regarding the PHI and RAO indicated to DEP that the requirements for public notice had not been met.

DEP required retraction of the RAO and submittal of an Audit Follow-up Plan, which would meet the requirements of a Phase II Scope of Work. Deadlines were also established for submittal of comprehensive response actions. Public notification requirements were also requested. (Northbridge, 2-00111, NON-CE-01-3103, January 23, 2002)

2. Following an audit of a Phase II Comprehensive Response Action (PHII), a Phase III - Remedial Action Plan (PHIII), and Phase IV - Remedy Implementation Plan (PHIV), DEP issued a NOAF/NON requesting additional comprehensive response actions.

The site is located at a transportation facility in an industrial area. The facility is used as a materials testing laboratory for concrete. The site was first listed as an LTBI in July 1990. Between 1989 and 2000, assessment of the site was conducted by three separate environmental consultants and included installation of 29 soil borings, 15 monitoring wells, and 1 test pit. Separate-phase petroleum was observed in one monitoring well in 1997. Metal contamination (lead and zinc) in soil was attributed to historic use of the site as a metal scrap yard. Petroleum contamination was attributed to current and former site uses. Polycyclic aromatic hydrocarbon (PAH) contamination in soil was reported to be attributable to

urban fill brought to the site during construction of current site features.

A report on PHII and PHIII comprehensive response actions was received in June 2000. A method 3 risk characterization was conducted. Soil was categorized as S-2 and S-3. Groundwater was categorized as GW-2 and GW-3. The hazard indices for construction workers and for residents were 2.3 and 3.1, respectively. The calculated Excess Lifetime Cancer Risk for residents and construction workers were  $1.2 \times 10^{-5}$  and  $0.3 \times 10^{-5}$ , respectively. The soil EPCs for zinc exceeded the upper concentration limits (UCL). The risk characterization concluded that a level of no significant risk does not exist. The PHIII evaluated three remedial alternatives including soil excavation/off-site disposal, soil capping, and in situ/ex-situ soil treatment. Soil capping was selected as the remedial action alternative.

A Phase IV report, detailing a plan for designing and constructing an engineered barrier was received by DEP in June 2001. It consisted of covering both existing paved and unpaved portions of the site (for metal contamination) with Class I Bituminous Concrete, underlain by a maker barrier. A gas vent layer and contaminant containment layer (per RCRA Subpart N) were not included as part of the proposed engineered barrier, based on the assertion that there is no potential for metal vapors, and the leachability of the soil materials is low. An infiltration swale was proposed to be constructed along the property line to allow pretreatment and minor infiltration of the storm water runoff.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. The initial evidence of petroleum and volatile organic compounds in soil on the southern half of the site and beneath the building, the initial identification of cyanide in groundwater, and the identification of elevated levels of lead and zinc along the property boundaries were not evaluated in the PHII, indicating to DEP that the requirement to define the extent of contamination had not been met
- b. Risk to utility workers was not evaluated in the risk characterization, indicating to DEP that the requirement to demonstrate a level of no significant risk had not been met;
- c. The feasibility of reducing concentrations of lead and zinc in soil to levels at or below the UCLs through limited remediation was not evaluated as part of a remediation alternative or before the engineered barrier remediation alternative was selected, indicating to DEP a failure to meet PHIII performance standards, and failure to conduct feasibility evaluations;
- d. There was no evaluation on the potential for mobilization of metals from the underlying soil in the highly contaminated area. There were insufficient groundwater data to predict leachability. Data that were available indicated the potential for lead to leach into groundwater. /

drainage swale was proposed to intercept and temporarily detain runoff. The swale will allow for some infiltration, indicating to DEP a failure to design an engineered barrier that would prevent infiltration of run-off that could result in mobilization and migration of contaminants;

- e. Specifications for various elements of the proposed engineered barrier, with the exception of Class I Bituminous Concrete, was not provided, indicating to DEP a failure to design an engineered barrier comprised of materials resistant to degradation; and
- f. DEP determined that a letter was not a sufficient financial mechanism(s) to ensure adequate monitoring/maintenance, and to replace the proposed barrier.

DEP called for submission of a Tier II Extension, collection of additional PHII data to further define the vertical and horizontal extent of metal and petroleum contamination, a revised risk characterization, additional PHIII evaluation to consider the feasibility of limited soil removal, and, if ultimately selected, the redesign of the engineered barrier and provision of a financial assurance mechanism to ensure adequate monitoring and maintenance and replacement of the barrier into the future. (Boston, 3-3103, NON-NE-02-3A002, January 25, 2002)

Additional information on the DEP's audit program can be found at:

<http://mass.gov/dep/bwsc/audits.htm>.

## **Enforcement - January 2002**

In January 2002, DEP BWSC issued 23 NONs, 11 Administrative Consent Orders (ACOs), 4 Administrative Consent Orders with Penalty (ACOPs), 1 Penalty Assessment Notice, and 1 Unilateral Administrative Order. Enforcement actions of particular significance in January include:

1. DEP entered into an ACOP with Tamarack Ski Corporation (Bousquet Ski Area) in Pittsfield for failure to submit a Tier Classification or RAO for releases at its property in Pittsfield, and failure to comply with the provisions of a NOAF for separate releases at its property in Pittsfield. A penalty of \$259 was assessed. Tamarack agreed to submit required reports in accordance with a compliance schedule. (Pittsfield, 1-10560, 1-10563, and 1-12923, ACOP-WE-01-3014, January 8, 2002)
2. DEP entered into an ACO with C.K. Smith & Company, Inc. (C.K. Smith) for failure to complete timely comprehensive response actions, including submittal of a Phase IV Completion Statement and a Response Action Outcome Statement or attainment of Remedy Operation Status at its property in Worcester. C.K. Smith agreed to complete necessary response actions under revised deadlines or pay stipulated penalties for each day that a violation of the deadlines occurs. The ACO was issued as a result of BWSC's comprehensive enforcement strategy for non-responders. (Kingston, 4-0573, ACO-SE-01-3T-005, January 10, 2002)

3. DEP entered into an ACO, with Shell Oil Company (Shell) of Houston, Texas for failure to meet Phase IV Comprehensive Response Action deadlines, failure to remove remediation waste within a timely manner, and failure to submit a Tier IB Permit Extension Application on time at its property in Fall River. Shell agreed to correct its failure to submit a Response Action Outcome or attain Phase V Remedy Operation Status within five years of the effective date of its Tier I Permit or pay stipulated penalties for each day that a violation of the deadlines occurs. (Fall River, 4-0749, ACO-SE-01-3P-008, January 15, 2002)

Additional information on DEP's current enforcement actions and policies can be found at: <http://mass.gov/dep/enf/enforce.htm>.

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## Audit and Enforcement Update for February 2002

### Audit Findings for February 2002:

DEP BWSC issued six Notices of Audit Findings (NOAFs) in February 2002. NOAFs of particular significance in February include:

1. Following an audit of an IRA, Phase I-Initial Site Investigation, Tier Classification, and Class A-2 Response Action Outcome (RAO) Statement, DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON). DEP requested retraction of the RAO Statement and submission of a Tier II Extension.

The site is located on a 495-acre residential property located in a sparsely populated area. A release of gasoline to soil and groundwater was discovered during removal of a 500-gallon underground storage tank (UST) near the residence. A wetland area is located approximately 300 feet from the release. A potable well is located approximately 1,700 feet uphill from the release. It was reported that the tank had been observed to be taking on water during the previous fall, and an area of dead vegetation was present on the slope approximately 80 feet downgradient from the tank location.

The release was reported to DEP in June 1995. IRA activities included the removal of approximately 809 tons of soil to a depth of up to 12 feet. Photoionization detector (PID) readings from the final limits of the excavation were between 1,750 and 3,900 parts per million (ppm) on the west and north walls. Five post-excavation composite soil samples were collected for Total Petroleum Hydrocarbon (TPH) analysis. Two of the samples had TPH concentrations of 100 and 240 milligrams per kilogram (mg/kg). Three groundwater monitoring wells were installed and groundwater samples were collected on the same day. Samples were not received at the laboratory until five days later. Elevated levels of volatile organic compounds (VOCs) were detected in the downgradient well,



including 3,000 micrograms per liter (ug/l) of Methyl tert-butyl ether (MTBE) and 930 ug/l of benzene.

In December 1996, DEP received a Phase I report, including a Method 1 risk characterization in support of a Class A-2 RAO. Groundwater was categorized as GW-3 and soil was categorized as S-2. DEP requires that groundwater in areas located more than 500 feet from a water supply pipeline be classified as GW-1, and soil on a residential parcel be classified as category S-1 to a depth of 15 feet.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. Since no portion of the site is located within 500 feet of a public water supply distribution line pipeline, groundwater at the site is located within an MCP-defined Potential Drinking Water Source Area, and must be categorized as GW-1;
- b. A condition of no significant risk had not been achieved since concentrations of VOCs in groundwater exceeded applicable GW-1 standards, which indicated to DEP that the requirement to conduct all required response actions at a site until a level of no significant exists or has been achieved;
- c. Failure to conduct VOC analysis on soil for a gasoline release indicated to DEP that the requirement had not been met to describe and document all oil and hazardous materials at the site for the purposes of risk characterization;
- d. Since VOC contaminants of concern were identified in groundwater for which no applicable Method 1 standard has been promulgated, a Method 2 or Method 3 risk characterization should have been performed; and
- e. Failure to provide notice to public officials regarding the RAO indicated to DEP that the requirements for public notice had not been met.

DEP also identified eight violations that did not require follow-up. DEP required retraction of the RAO and submittal of a Tier II extension. DEP requested additional follow-up fieldwork to be conducted within one year. (New Marlborough, 1-10911, NON-WE-02-3A006, February 11, 2002)

2. Following an audit of an Immediate Response Action (IRA) and Class A-2 Response Action Outcome (RAO) Statement, DEP issued a NOAF determining that response actions were performed in compliance with the requirements of the MCP, and that the information submitted to the DEP adequately documented those actions.

The site is located at a Bed & Breakfast establishment in a relatively rural area serviced by a municipal water supply. In June 2000, DEP received a 2-hour notification of a sudden release to a gravel driveway surface of

approximately 30 gallons of No. 2 fuel oil from a failed fuel delivery hose on an oil delivery truck. DEP approved IRA activities, including excavation of soil. The area affected by the release was approximately 30 feet by 30 feet. Approximately 32 tons of soil were excavated from depths up to 1.5 feet below grade. Groundwater was not encountered. Five confirmatory soil samples were obtained from the limits of the soil removal and analyzed for extractable petroleum hydrocarbons (EPH). EPCs developed from the analytical results were below applicable Method 1 soil standards. Groundwater media were not evaluated because the release was a sudden limited surface release. In August 2000, DEP received a Class A-2 RAO Statement. (Hinsdale, 1-13500, February 27, 2002)

Additional information on the DEP's audit program can be found at:  
<http://mass.gov/dep/bwsc/audits.htm>.

## **Enforcement - February 2002**

In February 2002, DEP BWSC issued 45 NONs, 4 Administrative Consent Orders (ACOs), 5 Administrative Consent Orders with Penalty (ACOPs), and 7 Penalty Assessment Notices (PANs). Enforcement actions of particular significance in February include:

1. DEP entered into an ACOP with Amaral Bus Co. of Westport for failure to report a release of petroleum to soil and pavement at its property in Westport. A penalty of \$3,300 was assessed. Amaral agreed to conduct assessment and remediation that will achieve a level of no significant risk. The company also agreed to a Supplemental Environmental Project (SEP) by implementing a facility emergency response plan and an environmental compliance-training program for its employees. The estimated cost of the SEP is \$2,000. (Westport, 4-16396, ACOP-SE-01-3E-015, February 1, 2002)
2. DEP entered into an ACO with Mr. William Bresett, the former owner of Buster's Garage in Adams, for failure to complete response actions required under Ch. 21E and the MCP for a release of gasoline from leaking underground storage tanks at Buster's Garage. Mr. Bresett agreed to complete the necessary response actions in accordance with compliance deadlines or pay stipulated penalties for each day that a violation of the deadlines occurs. (Adams, 1-0467, ACO-WE-01-3014, February 12, 2002)
3. DEP entered into an ACOP with Trucchi's Supermarket (Trucchi's) of Raynham for failure to complete response actions in a timely manner following a release of fuel oil at its property in Raynham. A penalty of \$7,000 was assessed. Trucchi's agreed to complete necessary comprehensive response actions within stipulated deadlines. In addition to the penalty, Trucchi's agreed to a Supplemental Environmental Project (SEP) by contributing \$5,000 to the Massachusetts Environmental Trust. (Raynham, 4-6025, ACOP-SE-01-3T-003-SEP, February 13, 2002)



Additional information on DEP's current enforcement actions and policies can be found at: <http://mass.gov/dep/enf/enforce.htm>.

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## Audit and Enforcement Update for March/April 2002

### Audit Findings for March/April 2002:

DEP BWSC issued 45 Notices of Audit Findings (NOAFs) in March/April 2002. NOAFs of particular significance in March/April include:

1. Following an audit of a Class B-2 Response Action Outcome (RAO) Statement, and Activity & Use Limitation (AUL) DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON). DEP concluded that the RAO submittal was not valid and therefore additional response actions were required.

The site, located in a commercial/residential urban area, is used as an automotive repair garage that was previously operated as a heating fuel storage and distribution facility. A residence is located within 500 feet of the site.

A 120-day release notification pertaining to a historic #2 fuel oil UST release was reported to DEP in November 1999. In June 1999, five 20,000-gallon underground storage tanks (USTs) were removed from the property. Odor and discoloration of soils was reported. Five confirmatory soil samples were collected, but it was not clear whether soil was removed for off-site disposal. Four soil borings, three of which were converted to monitoring wells, were installed on site during a Phase I Investigation in October 1999. Soil samples were collected for extractable petroleum hydrocarbon (EPH) analysis and groundwater was collected for EPH and volatile petroleum hydrocarbon (VPH) analysis. Based on the elevated results of VPH samples from groundwater it was recommended that a gasoline UST be removed from the site. Upon removal of this UST, a 72-hour release condition was observed and a separate release tracking number was issued. In November 1999, three additional soil borings/monitoring wells were installed. Separate-phase product up to ½ an inch was observed in one well.

On November 24, 2000, DEP received a Phase I investigation report, and a Class B-2 RAO with an AUL (for the 120-day condition). The AUL was placed on the entire property to restrict agricultural/gardening, recreational/parks, school, daycare, residential, healthcare, and hotel/motel uses. DEP conducted an audit inspection in November 2001. Separate-phase product at a thickness of between 0.01 feet and 0.44 feet was measured in the four remaining monitoring wells. DEP conducted a second audit inspection in January 2002, and noted separate-phase product in one of the two remaining monitoring wells. Four of the six wells were no longer present in 2002.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. Conflicting information and correlations with laboratory data sheets provided in reports indicated to DEP that inaccurate, incomplete or misleading statements were being made in document submissions;
- b. Failure to determine groundwater flow direction, and determine whether the oil/water separator and floor drains are acting as a source of release, indicated to DEP that the requirement to collect sufficient data and information to support conclusions regarding source and extent and potential impact had not been achieved;
- c. Levels of EPH fractions and phenanthrene in groundwater exceeded GW-2 and GW-3 standards at downgradient monitoring points, which indicated to DEP that the requirement to define the horizontal and vertical extent of contamination had not been defined;
- d. Levels of EPH fractions in groundwater exceeding GW-2 standards within 30 feet of on-site buildings and 200 feet of off-site residential buildings indicated to DEP that the requirement to evaluate the indoor air exposure pathway had not been conducted;
- e. An exposure point concentration for each contaminant of concern was not identified;
- f. The presence of separate-phase product greater than ½ inch that DEP identified during site inspections indicated to DEP that the requirement to adequately eliminate or control a source of release had not been met; and
- g. Twelve separate AUL violations were identified, including the failure to comply with the terms of the AUL regarding the maintenance of pavement, which indicated to DEP that the overall performance standards of an AUL had not been met.

In addition to the RAO invalidation, DEP required submittal of a Tier Classification, and Termination of the AUL within 60 days. (Boston-Roxbury, 3-19007, NON-NE-01-3A154, March 07, 2002)

2. Following an audit of a Class A-3 Response Action Outcome (RAO) Statement, and Activity & Use Limitation (AUL) DEP issued a NOAF/NON. DEP concluded that the RAO submittal was not valid and therefore additional response actions were required.

The site is located at a 148-acre regional school district property surrounded by light development and serviced by municipal water. Residences are not located within 500 feet of the site.

In August 1994, a release of No. 6 fuel oil was discovered during the removal of a 10,000-gallon underground storage tank (UST) and a 500-gallon No. 2 fuel oil UST. The 72-hr release condition was reported to DEP, which gave oral approval to conduct Immediate Response Action (IRA) activities, including the removal of approximately 225 cubic yards of contaminated soil. A January 1995 IRA Plan proposed to initially excavate accessible contaminated soil and relocate utility lines, with a second phase of removal planned for the summer. In March 1995 approximately 106 tons of soil was excavated and removed. Post-excavation total petroleum hydrocarbon (TPH) samples indicated the presence of TPH up to 1,900 milligrams per kilogram (mg/kg). The northern part of the excavation was not sampled because it was impacted with a black tar-like sludge. A new 10,000-gallon UST was installed into the excavation. In June 1995, DEP received an IRA Plan Modification that did not include relocation of utilities or removal of the remaining impacted soil due to "unnecessary and substantial endangerment".

DEP received an IRA Completion Statement and Class A-3 RAO with an AUL in July 1995. A risk characterization was not completed. An assumed TPH concentration of 8,025 parts per million was identified as remaining in soil. The IRA completion report indicated that the excavation AUL area would be asphalted. DEP conducted an audit inspection in July 2001. During the inspection it was noted that the asphalt cover for the AUL area was never installed. A school renovation project was planned in the AUL area.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. A risk characterization was not provided in support of the Class A-3 RAO opinion, which indicated to DEP that the requirement to use a risk characterization to either determine the need for remedial action or demonstrate a level of No Significant Risk had not been met;
- b. Separate-phase product remains in the excavation, which indicated

to DEP that the requirement to adequately eliminate or control a source of release had not been met;

- c. The RAO documentation did not include data or information demonstrating that the requirements of an RAO Statement have been achieved, which indicated to DEP that the RAO performance standards have not been met;
- d. The presence of separate-phase product in the excavation is considered a level that exceeds the UCL and therefore poses a Significant Risk and is not considered to be a Permanent Solution, which indicated to DEP that the requirement to achieve a Permanent Solution had not been met;
- e. The application of the AUL to the site was assumed to have eliminated any risk associated with the residual contamination and, therefore site remediation was not necessary. This indicated to DEP that the regulation preventing the use of an AUL in lieu of an applicable cleanup standard has not been met; and
- f. The response actions required paving the contaminated area by asphalt in support of the AUL. The paving was not completed, which indicated to DEP that the necessary response actions were not completed as proposed to support the RAO, and the Obligation and Conditions of the AUL were not adhered to.

In addition to the RAO invalidation, DEP required submittal of a Tier Classification, Termination of the AUL within 60 days, and the appropriate IRA reporting for the separate-phase response actions. (Mattapoisett, 4-10665, NON-SE-02-3A-006, March 06, 2002)

3. Following an audit of a Class A-3 Response Action Outcome (RAO) Statement, and Activity & Use Limitation (AUL) DEP issued a NOAF/ NOI requesting additional response actions.

The site is currently used as a community prayer center, consisting of two lots (one of which is improved by a 2-story building). At the time of the RAO filing, the property was used to store and repair emergency vehicles. Former uses of the property include an automotive garage and commercial laundry. USTs for the storage of gasoline were formerly located in the front of the building. A 275-gallon fuel oil UST was located at the rear of the building. A residence is located within 500 feet of the site. A playground borders the property to the south.

In December 1993, the 275-gallon fuel oil UST was removed from the rear of the property. Post-excavation soil sampling results indicated the presence of TPH at concentrations up to 17,300 mg/kg. Additional assessment of the area in March 1994 included the installation of six soil borings, of which three were converted to monitoring wells. Soil samples from each boring were collected for TPH analysis. TPH was detected at

the former fuel oil UST and at the former area of gasoline USTs. Additional assessment at the former location of gasoline USTs was conducted through the addition of four soil borings. Although soil headspace readings of 2,056 ppm were measured from the soil/water interface in one boring, TPH analysis of the soil sample revealed less than 10 mg/kg TPH. The sample was not analyzed for the presence of gasoline. Based on this information, an estimated 21 cubic yards of soil from the area of the former fuel oil UST was removed as a Limited Removal Action (LRA). The LRA was initiated in March and completed in June 1994. Post-excavation sampling indicated TPH under the building up to 12,900 mg/kg and elevated concentrations of lead in the soil stockpile. The elevated concentrations of lead prevented the soil from being accepted at an asphalt batch facility. A 120-day release notification pertaining to a #2 fuel-oil release was reported to DEP in May 1994 as identified through soil sampling during a 275-gallon UST removal. In June 1994, additional surficial soil sampling was conducted in the vicinity of the former fuel oil UST. Samples were collected to determine the average concentration of TPH under the building and TPH and lead concentration around the edge of the LRA excavation. Lead concentrations ranged from 207 to 5,680 mg/kg. A lead survey concluded that lead paint fell off the exterior of the building and was present in the surficial soil. A Release Abatement Measure was implemented in 1995 to remove 10 cubic yards of surficial soil to a depth of 3 feet. During the removal, a 55-gallon drum was uncovered that appeared to be a waste-oil disposal system associated with past operations of the property. The drum was removed and post-excavation sampling indicated TPH up to 2,490 mg/kg.

In May 1995, DEP received a Class A-3 RAO with an AUL and Method 1 risk characterization. It is not clear whether the AUL was placed on the entire property or portion of the property. There was no indication of which activities were inconsistent with the AUL. Obligations include maintenance of the impervious surface, no excavation, and maintenance of a steel fence. DEP conducted an audit inspection in February 2001. A break in the fencing was noted during the inspection.

## Findings

DEP identified the following violations of the MCP that require follow-up

- a. The extent of fuel oil soil contamination both underneath and downgradient of the building was not defined, the evaluation for gasoline contamination was not performed, and the extent of lead contamination was not defined to support the assertion of paint chips as the source, all of which indicated to DEP that the requirement to describe the source and extent of release including the horizontal and vertical extent and concentration in all media had not been met;
- b. The exposure point concentrations (EPCs) for TPH and lead in soils were not identified, and clear documentation to indicating which soil



were removed and the locations of residual concentrations of TPH and lead remain were not provided, which indicated to DEP that the requirement to identify and document an EPC in each medium at each exposure point had not been met; and

- c. A break in the fencing required by the AUL was noted during DEP's inspection, which indicated that the requirement to comply with the terms of an AUL was not being met.

DEP required additional assessment activities to address the violations and a revised risk characterization incorporating the results. (Lynn, 3-10983, NON-NE-02-3A-049, April 16, 2002)

Additional information on the DEP's audit program can be found at:  
<http://mass.gov/dep/bwsc/audits.htm>.

### **Enforcement - March/April 2002**

In March/April 2002, DEP BWSC issued 43 NONs, 2 Administrative Consent Orders (ACOs), 3 Administrative Consent Orders with Penalty (ACOPs), 10 Penalty Assessment Notices (PANs), and 1 Unilateral Administrative Order (UAO). Enforcement actions of particular significance in March/April include:

1. DEP entered into an ACOP with MHM Realty Trust of Wellfleet for failure to comply with a NON that required submittal of a Permit Extension Application, Phase II, Phase III and Short-Term Measure status reports pursuant to the MCP. A penalty of \$5,000 was assessed. MHM Realty Trust agreed to conduct necessary response actions. (Wellfleet, 4-0895, ACOP-SE-01-3P-016, March 21, 2002)
2. DEP entered into an ACOP with Motiva Enterprises LLC of Scituate for not meeting MCP deadlines for completing response actions at the site of a gasoline release to soil and groundwater. A penalty of \$21,000 was assessed. Motiva Enterprises agreed to complete necessary response actions. (Scituate, 4-0798, ACOP-SE-02-3T-001, April 23, 2002)
3. DEP issued a UAO and PAN of \$7,000 to Catuato Nominee Trust, of Cataumet, MA for failing to complete response actions in a timely manner at its property in Bourne. The order requires the company to continue response actions and to submit an RAO statement, or DPS, or a Tier Classification. (Bourne, 4-10448, SPAN-SE-02-3T-001 & UAO-SE-02-3T-001, April 26, 2002)

Additional information on DEP's current enforcement actions and policies can be found at: <http://mass.gov/dep/enf/enforce.htm>.



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## Audit and Enforcement Update for May 2002

### Audit Findings for May 2002:

DEP BWSC issued 22 Notices of Audit Findings (NOAFs) in May 2002. NOAFs of particular significance in May include:

1. Following an audit of a Class A-2 RAO Statement, DEP issued a NOAF determining that response actions were performed in compliance with the requirements of the MCP, and that no violations requiring additional actions were identified.

The site is located within a city street in a commercial area. In April 2000, DEP received a 2-hour notification of a sudden release within an excavation trench of approximately 1,800 gallons of non-polychlorinated biphenyl containing Mineral Oil Dielectric Fluid (MODF) from a ruptured concrete casing for an underground electric power transmission cable. DEP orally approved IRA activities, including repair, deployment of sorbent materials, and removal of the MODF from the trench and impacted catch basin, and excavation of impacted soil, and the addition of remedial additives.

Approximately 22 cubic yards of solid remediation waste, 1,825 gallons of oil and water, and 98 gallons of pure MODF were excavated. All remediation waste from the site was properly managed.

Excavation of the trench was limited due to the presence of several other buried utilities. Confirmatory soil samples were obtained from the bottom and sidewalls and analyzed for EPH with target PAHs. EPCs developed from the analytical results were below applicable Method 1 S3/GW-2 and S3/GW-3 soil standards. Assessment of the release was conducted through the installation of three soil borings, two of which were completed as small diameter wells. Groundwater was not detected in the wells.

After completion of the excavation activities, two 50-gallon batches of remedial additives were applied to the trench walls and bottom of the excavation. No base line groundwater samples were collected before the application. The LSP provided justification for not sampling groundwater due to the presence of a dense plastic clayey silt and absence of groundwater. Also, the site is located within a non-potential drinking water source area, and the remedial additive proved effective in remediating MODF with no deleterious effects.

In June 2000, DEP received a Class A-2 RAO Statement with a Method 1 risk characterization. Several PAH contaminants of concern that are not constituents of MODF, but which were observed in background samples collected, were eliminated from the risk characterization. The LSP concluded that a level of No Significant Risk had been achieved. (Boston, 3-19448, May 9, 2002)

2. Following an audit of a partial Class A-3 Response Action Outcome (RAO-P) Statement and Activity & Use Limitation (AUL), DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON). DEP concluded that additional response actions were required.

The subject property, located in a mixed commercial/residential urban area, is comprised of three parcels of land occupied by a one-story building formerly used as a gasoline sales and service station and a multi family residential building. The gas station is currently used solely for automobile repair and the residential building is vacant. Two gasoline underground storage tanks (USTs) were removed from the property in 1983. A waste-oil UST was removed in the late 1980s and was reported to be leaking upon removal.

A 120-day release notification pertaining to a waste oil UST release to soil and groundwater was reported to DEP in September 1995 (RTN 3-12952). DEP was also notified of a No. 2 fuel oil release in March 1996 (RTN 3-13592). Site assessment activities included the installation of 23 soil borings and 19 monitoring wells between September 1994 and December 1999. Approximately 129 tons of waste oil contaminated soil was removed during Release Abatement Measure (RAM) activities conducted in November 1995. Post-excavation soil sampling results indicated elevated residual concentrations of lead and total petroleum hydrocarbons (TPH). Contamination at the site was primarily waste oil in soil and No. 2 fuel oil in soil and groundwater limited to the vicinity of the former waste oil UST. According to the LSP, the No. 2 fuel oil was attributed to surficial spillage from fuel oil trucks formerly parked on the unpaved area near the former waste oil UST.

A Method 1 & 2 risk characterization was conducted. Soil was categorized as S-3 and groundwater was categorized as GW-3. Exposure Point Concentrations (EPCs) for soil were determined to be below applicable S 3 standards. Several EPCs for polycyclic aromatic hydrocarbons (PAHs) were significantly above S-3 standards. The LSP reported that these

compounds were located beneath the concrete floor of the garage and were below Upper Concentration Limits (UCLs). During two groundwater sampling events conducted in February 1996 and 1997 on Parcel A, concentrations of TPH decreased from 621 milligrams per liter (mg/l) to 11 mg/l. During two groundwater sampling events conducted in December 1997 and 1999, concentrations of extractable petroleum hydrocarbons (EPH) decreased from 450 mg/l to 42 mg/l on Parcel A. However, groundwater contamination on Parcel B of the property increased between December 1999 and August 2000 from 67 mg/l to 831 mg/l total EPH. Based on this information, the LSP concluded that a condition of No Significant Risk exists on the Parcel A portion of the site. As a result, on October 23, 2000 DEP received a Class A-3 RAO Partial with an AUL for a portion of the site (including RTNs 3-12952 & 3-13592). Further assessment and remedial actions were proposed for Parcel B.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. Investigation results did not support the assertion that surficial spillage was the source of the No. 2 fuel oil release. Additional investigation of an aboveground storage tank source was not conducted, and hydraulic lifts were not investigated, which indicated to DEP that the requirement to characterize the sources and extent of contamination had not been achieved;
- b. EPCs for several PAH compounds exceeded the applicable Method 1 standards, which indicated to DEP a failure to demonstrate a condition of No Significant Risk;
- c. Ten separate AUL violations were identified, including a failure to clearly indicate whether the AUL applied to the entire property or a portion, indicating to DEP that the overall performance standards of an AUL had not been met;
- d. Phase II, Phase III, and Phase IV reports were not submitted to DEP and a written notification of delay was not submitted; which indicated to DEP a failure to comply with deadlines for Phased submittals, as well as a failure to provide a timely written notice of delay.

DEP required submittal of a Tier II Extension for additional response actions and Termination of the AUL within 90 days. (Watertown, 3-12952 & 3-13592, NON-NE-02-3A052, May 22, 2002)

3. Following an audit of a Class A-2 RAO Statement, DEP issued a NOAF/ NON. DEP concluded that additional response actions were required.

The site is located at a former gas station property, which has been operating as a retail store since June 2001. The site is located within an Interim Wellhead Protection Area (IWPA); surrounding properties are commercially zoned. Information indicates that the property had five USTs and operated as a filling station between 1960 and 1986. The tanks were

removed in 1986, but the condition upon removal was not documented. In addition, five monitoring wells were present on the property, but information on their installation and construction was not available.

In September 1999, a property transfer investigation was conducted. The investigation included the excavation of three test pits and sampling of five existing monitoring wells. A 120-day release notification condition was identified in groundwater due to naphthalene and a volatile petroleum hydrocarbon (VPH) fraction being detected above the applicable GW-1 reporting category. Additional site assessment activities were conducted in November 1999 and included the installation of three soil borings/monitoring wells. Contaminant concentrations detected in these wells were approximately 10 to 100 times greater than during the September 1999 investigation. The property was sold in July 2000 and DEP received notice of the release in August 2000. Along with notification DEP received a RAM plan for the installation and operation of a groundwater remediation system.

During renovation of the property and installation of the remedial system, all existing monitoring wells were destroyed. Therefore, five additional soil borings/monitoring wells were installed in March 2001. Sampling of the monitoring wells in March 2001 did not indicate the presence of VPH compounds above applicable GW-1 standards. The groundwater remediation system was shut down in April 2001. Subsequent groundwater sampling rounds in June and July 2001 noted increasing concentration trends. At least one VPH fraction exceeded its applicable GW-1 standard in the July 2001 sampling round.

DEP received a Class A-2 RAO with a Method 1 risk characterization in August 2001. Soil EPCs were developed using analytical results from test pits and soil borings. Averaging concentrations from each groundwater monitoring point over time was used to develop groundwater EPCs.

### Findings

DEP identified the following violation of the MCP that requires follow-up:

The latest rounds of groundwater monitoring indicated an increasing trend of VPH carbon fraction contamination at the site, which indicated to DEP that the requirement to adequately eliminate or control a source of release had not been met.

DEP required additional assessment of groundwater conditions at the site including a sufficient number of groundwater sampling rounds to ascertain the groundwater quality trend. If groundwater impacts appear to be increasing or exceed applicable standards, retraction of the RAO and further response actions would be necessary. (Marshfield, 4-15673, NON SE-02-3A-018, May 29, 2002)



Additional information on the DEP's audit program can be found at:  
<http://mass.gov/dep/bwsc/audits.htm>.

## Enforcement - May 2002

In May 2002, DEP BWSC issued 33 NONs, 4 Administrative Consent Orders (ACOs), 7 Administrative Consent Orders with Penalty (ACOPs), 5 Penalty Assessment Notices (PANs), and 2 Unilateral Administrative Order (UAO). Enforcement actions of particular significance in May include:

1. DEP entered into an ACOP with Cumberland Farms of Barnstable for failing to comply with a Notice of Noncompliance that required submittal of a revised Phase II Report. A penalty of \$15,000 was assessed. Cumberland Farms agreed to conduct additional comprehensive response actions at the site to attain a Remedy Operation Status or achieve a Response Action Outcome. (Barnstable, 4-10850, ACOP-SE-02-3P-002, May 8, 2002)
2. DEP issued a UAO and PAN of \$7,000 to Locust Valley Management Corp., of Attleboro for failing to complete response actions in a timely manner at the Locust Valley Country Club. The order requires the company to continue response actions and to submit an RAO statement, or DPS, or a Tier Classification within established deadlines. (Attleboro, 4-11859, SPAN-SE-02-3T-002 & UAO-SE-02-3T-002, May 7, 2002)
3. DEP issued a UAO and PAN of \$30,250 to Motiva Enterprises LLC of Leominster as a result of unauthorized discharge of pollutants to the North Nashua River and failure to perform an appropriate IRA or satisfy the MCP's Response Action Perform Standards. DEP alleges that the company, which operates a Shell gasoline station on property abutting the North Nashua River, was required to initiate a containment or removal action as an IRA to prevent a gasoline plume at its property from discharging into the river. Rather than implement any one of the several feasible remedial alternatives identified by two different LSPs, the company instead chose to monitor the site over a three-year period and then claimed that it was not feasible to do anything but monitor natural attenuation of the groundwater contamination. (Leominster, 2-14340, PAN-CE-02-3003 & UAO-CE-02-3002, May 24, 2002)

Additional information on DEP's current enforcement actions and policies can be found at: <http://mass.gov/dep/enf/enforce.htm>.

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# waste site cleanup

 

## Audit and Enforcement Update for June 2002

### Audit Findings for June 2002:

DEP BWSC issued 25 Notices of Audit Findings (NOAFs) in June 2002. NOAF of particular significance in June include:

1. Following an audit of a Class A-3 Response Action Outcome (RAO) Statement and Activity & Use Limitation (AUL), DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON). DEP concluded that the RAO submittal was not valid and therefore additional response actions were required.

The site, located in a mixed commercial/residential urban area, is improved with a large multi-story building that was constructed in the late 1800's, and operated as a shoe factory from 1876 until 1991. The building is currently home to a variety of small businesses. Residential properties are located to the south and west. A brook is located approximately 500 feet north of the site. Multiple environmental investigations were conducted between 1988 and 1991. The investigations identified arsenic and 1,4 dichlorobenzene contamination in groundwater, and total petroleum hydrocarbon (TPH) contamination in soil around floor drains located in the basement of the building. Soil was excavated from in, around, and beneath the floor drains. In 1994, two 5,000-gallon underground storage tanks (USTs) were removed from the site. The tanks were originally used to store No. 6 fuel oil and were later converted to store No. 2 fuel oil. During the tank removals, a 72-hour soil headspace reportable release condition was identified. An immediate response action (IRA) plan was approved for additional assessment of the USTs as well as the building floor drains. The UST assessment identified elevated levels of TPH in soil and groundwater. The site was classified as a Tier II site in 1995. A second IRA plan, submitted in 1995, proposed the removal of contaminated soil. Excavation activities began in 1997 and included the removal of 580 tons of soil and 800 gallons of groundwater. Post-

excavation analysis of both soil and groundwater was conducted for Volatile Petroleum Hydrocarbons (VPH) with target analytes and Extractable Petroleum Hydrocarbons (EPH) with target analytes. VPH carbon fractions, VPH target compounds and EPH carbon fractions were detected in soil samples below the applicable Method 1 S-3 soil standards. Several polycyclic aromatic hydrocarbons (PAHs) were detected above Method 1 S-3 soil standards and/or above Upper Concentration Limits (UCLs). VPH carbon fractions, VPH target analytes and PAHs were not detected above applicable standards in groundwater. EPH carbon fractions were detected in groundwater above the applicable Method 1 GW-2 standards.

In November 1999, DEP received a Phase II Comprehensive Site Assessment and Class A-3 RAO Statement with a Method 3 risk characterization. Soil samples exhibiting the highest levels of PAH contamination were eliminated from the Exposure Point Concentration (EPC) calculations. Groundwater EPCs were calculated by averaging sampling data from different monitoring wells.

The results of the Method 3 risk characterization determined that the site does not pose a risk to public welfare since EPCs calculated for soil and groundwater do not exceed their applicable UCLs, there are no nuisance conditions existing at the sites, and no reasonably foreseeable adverse impacts to the community.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. Levels of detected PAH contamination exceed applicable UCLs, which indicated to DEP that a RAO Statement is not applicable to the site.
- b. The Method 3 risk characterization failed to document a level of no significant risk. Soils containing UCL levels of PAHs have not been permanently immobilized or fixated as a result of remedial actions, are not located at a depth greater than 15 feet below grade, and are not located beneath an engineered barrier, which indicated to DEP that a Permanent Solution has not been achieved.
- c. Soil samples exhibiting the highest levels of PAH contamination were not included in the EPC calculations, which indicated to DEP that the EPCs were not calculated correctly for soil. Groundwater EPCs for the Method 3 human health risk characterization were developed by averaging exposure points across the entire disposal site, which indicated to DEP that the EPCs for the Method 3 human health risk characterization were calculated incorrectly.

After deeming the RAO not to be valid, DEP required submittal of a Tier II

Classification Extension, and Termination of the AUL within 60 days. (Rockland, 4-10626, NON-SE-02-3A-002, June 11, 2002)

2. Following an audit of a Class A-1 Response Action Outcome (RAO) Statement, DEP issued a NOAF/NON. DEP concluded that additional response actions were required.

The site is located at a 10-acre property at the mouth of two major rivers in an industrial/residential urban area. The property is improved with a warehouse/garage, machine shop, analytical laboratory, seafood holding facility, and offices. Past uses of the property since 1800 included an electrical power station; coal company; rubber and cloth factory; ferry company; wood, manure and cloth storage; apparel and furniture manufacturing; and printing facility.

A 120-day release notification pertaining to the presence of TPH, PAHs, and lead in soil was reported to DEP in February 1998. Between 1994 and 1999 assessment activities included the installation of 15 soil borings and 8 monitoring wells, and excavation of sixteen test pits were conducted across the property. A sediment sample was also collected in a dry dock area. Analytical results from the assessment activities identified three areas of contamination on the property including the warehouse/garage area, the seawall area, and the construction vehicle parking area. Contamination was also identified in the dry dock sediment sample. Approximately 3.35 tons of contaminated soil was removed from a construction vehicle parking area as part of a Release Abatement Measure (RAM) in October 2000.

In January 2001, DEP received a Class A-1 RAO Statement with a Method 1 risk characterization. The RAO concluded that groundwater had not been impacted by either on or off-site sources. The RAO identified the disposal site as the Construction Vehicle Parking Area. The contamination in this area was attributed to typical releases from the parking of construction vehicles. Identified contamination in the Garage and Seawall Fill Areas was not included in the disposal site. The Garage Area contamination was not included in the disposal site since it was stated to be contained by concrete and not released to the environment. The Seawall Fill Area contamination included TPH and PAHs, which were attributed to fill material containing ash, coal, and wood. The sediment contamination was compared to applicable Method 1 S-3 soil standards. The RAO concluded that a level of no significant risk exists at the site based on the Method 1 risk characterization.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. Adequate documentation indicating that contaminants have been reduced to background conditions was not provided since elevated

levels of lead and TPH remaining in on-site soil, and elevated levels of lead and zinc remaining in sediment were not determined to be background, which indicated to DEP a failure to use MCP criteria to correctly categorize a RAO Statement;

- b. The RAO demonstrated that levels of lead and zinc in sediment did not significantly impact the environment by comparing the levels to Method 1 S-3 soil standards, which indicated to DEP a failure to correctly conduct a Stage I Environmental Screening.

DEP required submittal of additional information to justify background levels of TPH, lead, and zinc to support the Class A-1 RAO statement or submittal of a revised comprehensive response action reports and the RAO, including the Stage I Environmental Screening within 90 days. (Chelsea, 3-15990, NON-NE-02-3A075, June 27, 2002)

3. Following an audit of a Class A-2 RAO Statement, DEP issued a NOAF determining that response actions were performed in compliance with the requirements of the MCP, and that no violations requiring additional actions were identified.

The 18,000 square foot site is occupied by a one-story building currently used as an automobile repair garage. The site was used as a gasoline service station from 1935 to 1993. The site is located within a residential area. A church with a basement daycare facility is located approximately 170 feet to the south, and a river is located approximately 80 feet to the northwest.

The site was listed as a Location To Be Investigated (LTBI) in 1987 due to the discovery of petroleum contaminated soil during the excavation of a sewer line in 1986. Assessments conducted in 1985 and 1987 noted non-aqueous phase petroleum product (NAPL) in monitoring wells in the vicinity of eight USTs and a pump island. In addition, a petroleum sheen was observed seeping into the nearby river. In 1993, DEP required an IRA to address the substantial release migration of contamination to the nearby river. As part of the IRA, the eight USTs and pump island were removed and approximately 3,700 tons of contaminated soil were excavated. 2,500 tons of soil were thermally treated on site and then backfilled, with the remaining material transported off site for disposal. The IRA was amended to include operation of a passive NAPL recovery system. In addition, a soil vapor extraction system and groundwater treatment system were installed and activated in 1995. The IRA was completed in 2000. Assessment of the site included the UST post-excavation soil sampling, the installation of nine soil borings/monitoring wells and 22 soil vapor monitoring wells, several additional soil boring/monitoring wells, recovery wells, and soil vapor monitoring points were installed along the across the site and along the abutting streets. Twelve sediment and three surface water samples were collected from the nearby river. Soil gas samples were collected in the vicinity of the on-site building and near the church across the street.

In May 2002, DEP received a Class A-2 RAO Statement with a Method 1 risk characterization. Soil was categorized as S-3 and groundwater was categorized as GW-2 and GW-3. Soil EPCs were determined by averaging contaminant concentrations detected in soil across the site. The most current groundwater data at each exposure point (each monitoring well) were used as the groundwater EPCs. All soil EPCs were below applicable Method 1 standards, and all groundwater EPCs were below applicable Method 1 standards with the exception of one exposure point, which was consistently above the applicable GW-2 standard. A soil gas survey conducted to address the potential for indoor air impacts from groundwater did not identify a significant risk. A Stage I Environmental Screening was conducted by comparing sediment and surface water concentrations to the Federal Ambient Water Quality Criteria, the Lowest Observed Effect Levels derived from literature using the Aquatic Toxicology Retrieval System database, and the standards developed by the National Oceanic and Atmospheric Administration. The Stage I Screening indicated that there was no risk of harm to habitats and biota through exposures to sediment and surface water in the river.

The assessment and remediation approach for this site was thorough in that: it incorporated rigorous site remediation, including soil removal and remediation, NAPL recovery and Soil Vapor Extraction; and, a conceptual site model approach including soil gas samples to evaluate indoor air and an evaluation of potential exposure to surface water. (Methuen, 3-0030, June 28, 2002)

Additional information on the DEP's audit program can be found at:  
<http://mass.gov/dep/bwsc/audits.htm>.

## **Enforcement - June 2002**

In June 2002, DEP BWSC issued 28 NONs, 1 Administrative Consent Order (ACO), 2 Penalty Assessment Notices (PANs), and 1 Unilateral Administrative Order (UAO). Enforcement actions of particular significance in June include:

1. DEP issued a UAO and PAN of \$7,000 to Robert Flood of East Bridgewater for failing to complete response actions in a timely manner at his commercial property. The order requires the company to continue response actions and to submit an RAO statement, or DPS, or a Tier Classification within 21-days. (Bridgewater, 4-12369, SPAN-SE-02-3T-003 & UAO-SE-02-3T-003, June 13, 2002)
2. DEP issued a \$14,625 PAN to Oscar Kress and Concord-Acton Park Realty Trust for failing to maintain the surface cover system that was constructed under the MCP at the former Agway pesticide site in Acton, as required by an Activity and Use Limitation (AUL). The AUL was intended to maintain a level of no significant risk by ensuring the maintenance of the surface cover system and restricting activities that could damage it and result in exposure to soils beneath it. Without LSP oversight, Kress had the topsoil removed from the surface cover system

and filled the area and perimeter drainage swales with sand. He then failed to take corrective action after DEP learned of the alterations. (Actor 2-0003, PAN-CE-02-3004, June 28, 2002)

Additional information on DEP's current enforcement actions and policies can be found at: <http://mass.gov/dep/enf/enforce.htm>.

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### Audit and Enforcement Update for July 2002

#### Audit Findings for July 2002:

DEP BWSC issued 25 Notices of Audit Findings (NOAFs) in July 2002. NOAFs of interest in July include:

1. Following an audit of a Class A-3 Response Action Outcome (RAO) Statement and Activity & Use Limitation (AUL), DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON). DEP concluded that the RAO submittal was not valid and therefore additional response actions were required.

The site is a 3.15-acre property currently used as a recreational park. The site was formerly used for munitions and marine storage; and light industrial, manufacturing, and commercial uses since the 1940s.

An initial subsurface investigation, including the installation and sampling of several groundwater monitoring wells, was conducted at the property between 1991 and 1992. DEP issued a Notice of Responsibility for the release of metals, polychlorinated biphenyls (PCBs) and petroleum at the property in 1994. In 1994 and 1998, Release Abatement Measures (RAMs) were conducted and included the removal of 694 tons of contaminated soil and 60 cubic yards of debris. A warehouse building was demolished in 1996. Additional site investigations were conducted in 1997. Seventeen soil borings and nine groundwater monitoring wells were installed across the property.

In July 2000, DEP received a Class A-3 RAO Statement with a Method 1 risk characterization. Groundwater was categorized as GW-3. Based on historical groundwater sampling data, the Method 1 GW-3 standards were not exceeded for any of the contaminants detected. Concentrations of TPH, lead and PCBs in soil were averaged to obtain the Exposure Point Concentrations (EPCs). The EPCs for PCBs [10 milligrams per kilogram

(mg/kg)] and lead (1,363 mg/kg) in soil (0 to 3 feet) in the area south of the former warehouse building exceeded the Method 1 S-1, S-2 and S-3 soil standards. To address concerns of future use of the vacant parcel as a public park, an Activity & Use Limitation was implemented. The AUL included a provision for the placement of one foot of "clean soil" and asphalt paving that was to be maintained as a barrier. A DEP inspection of the site did not identify either the "clean soil" or the asphalt-paving barrier required by the AUL.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. PCB contamination was detected west of the former warehouse building at levels 10 times greater than the applicable cleanup standard, which indicted to DEP that the extent of contamination has not been defined.
- b. The EPCs for PCB and lead significantly exceeded the applicable Method 1 standards, which indicated to DEP a failure to demonstrate that a level of no significant risk (NSR) had been achieved using a Method 1 risk assessment.
- c. EPCs for PCB and lead significantly exceeded the applicable Method 1 standards in the area of the AUL, which indicated to DEP the improper use of an AUL to eliminate risk.
- d. The AUL contained obligations for placing and maintaining a barrier that was discovered by DEP to have not been constructed, which indicated to DEP a failure to institute and maintain an AUL.

After deeming the RAO not to be valid, DEP required submittal of a Tier II Classification Extension, completion of revised comprehensive response actions and Termination of the AUL within 60 days. (Weymouth, 3-3889, NON-NE-02-3A076, July 5, 2002)

2. Following an audit of a Class A-2 RAO Statement, DEP issued a NOAF determining that response actions were performed in compliance with the requirements of the MCP, and that no violations requiring correction were identified.

The site is located at a residential property in a residential area, which is improved by a 2-story home. In June 1998, a Limited Removal Action (LRA) consisting of soil excavation was performed to address a #2 fuel oil release from an aboveground storage tank (AST) located outside of the residence. The release appeared to be the result of a leak in the fitting and a small hole in the tank. During the LRA, oily-water was encountered flowing into the excavation. DEP approved the continuation of the LRA as a RAM, which included the removal of 1,600-gallons of impacted groundwater and up to 40 cubic yards of soil. Post-excavation soil samples were collected and nine small diameter monitoring wells together with three hand-driven sampling points were installed to assess the

results of the initial response actions. Based on this assessment, additional soil removal was conducted. Post-excavation samples were collected following the additional excavation activities.

In February 1999, DEP received a Class A-2 RAO Statement with a Method 1 risk characterization. Groundwater and soil were classified as categories GW-2/GW-3 and S-1, respectively. The RAO asserts that a condition of NSR exists for all current and future activities and uses at the site. (Weymouth, 3-16926, July 18, 2002)

3. Following an audit of a Class A-3 RAO Statement and AUL, DEP issued a NOAF/NON. DEP concluded that additional response actions were required.

The site is located in a mixed commercial and residential area and is occupied by a one-story garage building currently and formerly used by a succession of telecommunication companies for to store and maintain vehicles since 1962. Four USTs for the storage of waste oil, #2 fuel oil, and gasoline were located on the site. A building floor drain system, which formerly discharged to a tributary to a river, located approximately 350 feet east of the site, was sealed in 1989.

In 1987, the waste oil UST was removed and determined to be leaking (RTN 1-00392). Approximately 25 cubic yards of impacted soils were removed. An assessment was completed in 1988 and the release was classified as a Tier II site in August 1995. In October 1995, a second release condition (RTN 1-11089) was identified during the removal of two gasoline USTs. An IRA "assessment only" plan was approved by DEP. Although multiple holes in one UST, soil staining, and a petroleum sheen were observed in the excavation, soil excavation was not performed due to the presence of solid waste refuse. DEP had no record of an IRA Completion Statement for this release. Assessment activities identified elevated concentrations of lead in soil. In October 1996, the release was classified as a Tier II disposal site. In October 1995, a third release condition (RTN 1-11292) was identified during the removal of a 2,000-gallon fuel oil UST. Soil screening and post-excavation soil sampling was conducted. In February 1997, the release was classified as a Tier II disposal site. In 1999 and 2000, DEP issued NONs for failure to complete comprehensive response actions or submit RAOs for RTNs 1-00392 and 1-11089. DEP issued an Administrative Consent Order with Penalty for all 3 releases.

In August 2000, DEP received a Class A-3 RAO Statement and Activity & Use Limitation with a Method 3 risk characterization. The gasoline and fuel oil releases were addressed as "Area 1" and the waste oil release was addressed as "Area 2". A "surface barrier" comprised of 10 yards of clean fill was placed in Area 2. Soils in both areas were categorized as S-3 even though accessible, unpaved contaminated soils are located in Area 2. Risk exposure assumptions indicated that the portion of contaminated soil in Area 2 was estimated to be 25 percent of the "soil-

exposed area", and indoor workers would be exposed to these soils one-hour per day. AULs were implemented at Areas 1 and 2 to prohibit residential use and other activities involving the presence of children.

### Findings

DEP identified the following violations of the Massachusetts Contingency Plan (MCP) that require follow-up:

- a. A surface barrier was constructed at the site through the placement of clean fill without DEP approval, which indicated to DEP failure to conduct an approved remedial action;
- b. Soil contamination in Area 2 was not sufficiently characterized, which indicated to DEP that the extent of contamination had not been defined;
- c. An worker soil exposure duration of one-hour per day was estimated, which indicated to DEP that scientifically accepted risk assessment practices were not applied;
- d. An exposure assumption that Area 2 represents 25 percent of the "soil exposed area" indicated to DEP that a conservative estimate of exposure and associated EPCs were not being applied;
- e. Soil in Area 2 was categorized as S-3 even though accessible, unpaved contaminated soils exist, which indicated to DEP a failure to properly categorize soil as S-2;
- f. Three separate AUL violations were identified, including a failure to clearly and accurately describe obligation conditions, indicating to DEP that some performance standards of an AUL had not been met.

DEP required a revised RAO, risk characterization and confirmatory AUL addressing the violations or retraction of the RAO within 120 days. (North Adams, 1-00392, 1-11089, & 1-11292, NON-WE-02-3A053, July 30, 2002)

Additional information on the DEP's audit program can be found at:  
<http://mass.gov/dep/bwsc/audits.htm>.

### Enforcement - July 2002

In July 2002, DEP BWSC issued 32 NONs, 3 Administrative Consent Orders (ACOs), 4 Penalty Assessment Notices (PANs), and 3 Unilateral Administrative Orders (UAOs). Enforcement actions of interest in July include:

1. DEP issued an ACO to Storms Forge of Springfield for failing to complete Immediate Response Action (IRA) activities to address a separate-phase product condition at its property. Storms Forge agreed to complete the IRA. The agreement includes stipulated penalties. (Springfield, 1-1064, ACO-WE-02-3005, July 15, 2002)
2. DEP issued a UAO and PAN of \$7,000 to G&L Bedford Realty Inc., New Bedford, for failure to complete response actions at its property in a timely

manner. This follows the company's noncompliance with an NON. The order requires the company to continue response actions and to submit an RAO statement, DPS, or a Tier Classification. (New Bedford, 4-12810, SPAN-SE-02-3T-005 & UAO-SE-02-3T-005, July 23, 2002)

3. DEP issued a UAO and PAN of \$7,000 to Campanelli Companies, Brockton, for failure to complete comprehensive response actions in a timely manner. The company was issued an NON in March 2002. (Brockton, 4-15851, SPAN-SE-02-3T-006 & UAO-SE-02-3T-006, July 29, 2002)

Additional information on DEP's current enforcement actions and policies can be found at: <http://mass.gov/dep/enf/enforce.htm>.

### Helpful Hint

Recent audits of Activity and Use Limitation (AUL) submittals have revealed that the majority of AULs are not being submitted in accordance with the MCP requirements for filing AULs with the Department. 310 CMR 40.01074(4) lists the documents that should be submitted to the Department along with the certified copy of the AUL. A Registry copy of the required survey plan(s) referenced in the AUL, bearing the plan book/plan number(s), must be submitted to the Department within thirty days of recording the AUL. If the property subject to the AUL is unregistered land, a Registry copy of the owners deed bearing marginal reference to the AUL, as required by 310 CMR 40.1074 (3), must also be submitted to the Department. The filing requirements noted in 310 CMR 40.1074(4) are in addition to the public notice requirements set forth in 310 CMR 40.1403(7) and the requirements for the content of an AUL set forth in 310 CMR 40.1074(2). Please be advised that technical screening checklists for AULs, listing these and other MCP requirements, are available on the Department's website at <http://www.state.ma.us/dep/bwsc/files/audits.htm>.

### Author's Note:

Both internal and external recommendations have encouraged DEP to evaluate the current format of this article and to consider alternative formats for presenting the audit and enforcement information. In the coming months, DEP will be presenting some alternatives. In the meantime, DEP would like to hear from you in this endeavor. Please forward any thoughts, comments, suggestions, or concerns to [thomas.potter@state.ma.us](mailto:thomas.potter@state.ma.us).

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# waste site cleanup

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## Audit Update for August and September 2002

As a result of refinements made to the DEP Audit Program between 1999 and 2002, DEP auditing now includes three types of audits, which are commonly referred to as Level I, Level II, and Level III audits. Level I audits are file review audits of submittals using technical checklists developed by DEP. These checklists are available to the public through the following web address: <http://mass.gov/dep/bwsc/files/audits/screen.htm>. Level II audits include focus reviews and site inspections of ongoing assessment and remediation activities as well as Activity & Use Limitation sites. Level III audits include comprehensive reviews of all response actions conducted at a site and a site inspection.

### Level II Audits for August and September 2002:

DEP completed Level II audits and issued NOAFs at 10 sites between August and September 2002. One Notice of Noncompliance (NON) was issued with DEP's findings. Level II audits of interest in August and September 2002 include:

1. Following an audit of an ongoing Release Abatement Measure (RAM) at a Tier IC permitted site, DEP issued a NOAF/NON that did not identify any violations of the requirements applicable to the RAM; however, the NOAF/NON did identify a failure to complete comprehensive response actions including the Phase II Scope-of-Work, the Phase II Comprehensive Site Assessment, and the Phase III Remedial Action Plan for the site. DEP required that the comprehensive response actions in violation be completed within four months, and that a Phase IV Remedy Implementation Plan be submitted thereafter. (West Brookfield, RTN 2-12058, August 20, 2002)
2. Following an audit of a remedial system being operated under Phase V - Remedy Operation Status (ROS), DEP issued a NOAF that did not identify any violations of the requirements applicable to



the remedial system operation at the site. The system included soil vapor extraction with air sparging. Off-gas treatment control devices were determined to be achieving 95% reduction. (East Longmeadow, RTN 1-00063, August 23, 2002)

3. Following an audit of an ongoing Immediate Response Action (IRA), DEP issued a NOAF that did not identify any violations of the requirements applicable to the remedial system operation at the site. The IRA was being conducted to address impacts to an on-site bedrock water supply well at a residence where a treatment system is in place. The well is periodically sampled. During the audit inspection, DEP collected samples for volatile organic compound (VOC) analysis by EPA Method 525 and total petroleum hydrocarbon (TPH) analysis by EPA Method 1664. Analytical results did not identify concentrations of VOC or TPH above analytical method detection limits. (Harvard, RTN 2-13968, September 6, 2002)

### **Level III Audits for August and September 2002:**

DEP completed Level III audits and issued NOAFs at 26 sites between August and September 2002. Eleven NONs were issued with DEP's findings. Level III audits of interest in August and September 2002 include:

1. A leak in a 20,000-gallon No. 6 fuel oil underground storage tank (UST) resulted in a release to soil and groundwater at an industrial site. An IRA was conducted including excavation and removal of contaminated soil. A Phase II comprehensive site assessment was performed and a Class A-2 Response Action Outcome (RAO) was submitted to DEP. DEP issued a NOAF/NON for the site and concluded that either additional response actions were required, or the RAO should be retracted. DEP identified that several TPH soil samples exceeding Upper Concentration Limits (UCLs) were eliminated from the calculation of exposure point concentrations (EPCs) and inclusion in the risk characterization; that the extent of contamination beyond the identified UCL areas was not identified; and that polycyclic aromatic hydrocarbons were not evaluated as possible contaminants of concern associated with a No. 6 fuel oil release. (North Adams, RTN 1-10038, NON-WE-02-3A-60, August 22, 2002).

2. A historic release of chlorinated solvents at a drycleaner resulted in a release to soil and groundwater. Assessment activities were conducted and a Class B-2 RAO Statement and Activity & Use Limitation (AUL) were submitted to DEP. DEP issued a NOAF/NON, concluding that the RAO submittal was not valid and that additional response actions were required. DEP found that the AUL was inappropriately used to change the groundwater category of groundwater categorized as GW-1. The site is located within a Potential Drinking Water Source Area. The Method 3 risk characterization submitted to DEP indicated that the Maximum

Contaminant Levels (MCLs) for groundwater had not been met. (Falmouth, RTN 4-12973, NON-SE-02-3A-026, August 28, 2002).

3. Historical releases of gasoline at a gasoline sales and service station operation were identified in soil and groundwater media since 1978 both in dissolved and separate phase states. Assessment and remediation activities were conducted, including the installation and operation of a light non-aqueous phase liquid (LNAPL) recovery/groundwater pump and treat system and a soil vapor extraction and air sparge system. Groundwater was classified as GW-2 and GW-3. A Phase III Remedial Action Plan and Class C RAO were submitted to DEP. Monitored Natural Attenuation (MNA) was selected as the remedial alternative. DEP issued a NOAF/NON concluding that the RAO submittal was not valid and that additional response actions were required. DEP found that the groundwater should have been classified as GW-1 due to the site's location within a Current Drinking Water Source Area (CDWSA); and given the age of the release and location of the site in a CDWSA a more aggressive remedial alternative may be feasible. (Westborough, RTN 2-0733, NON-CE-02-3068, September 17, 2002).

4. A leak in a hydrogenerator resulted in a release to soil of toluene and 2,4-dichloro-3-ethyl-6-nitrophenol (photographic chemical intermediate) at an industrial site. Excavation and removal of contaminated soil and soil sampling to address the release were conducted as an IRA. A Class A-2 RAO was submitted to DEP. DEP issued a NOAF for the site and concluded that response actions were performed in compliance with the requirements of the Massachusetts Contingency Plan (MCP), and the information submitted to DEP adequately documents those actions. (Fitchburg, RTN 2-13698, September 30, 2002).

### Further Audit Information

Further information on specific audit findings and a copy of the complete Notice of Audit Finding (NOAFs) letter can be obtained through a file review request made at one of DEP's four regional service centers. NOAFs are available in regional site files, as well as in binders cataloged by date. The binders include NOAFs from all four regions. Regional service centers corresponding to DEP's release tracking number (RTN) system are identified as follows:

RTN	REGIONAL OFFICE	SERVICE CENTER PHONE
1-xxxxxx	Western - Springfield	413.755.2214
2-xxxxxx	Central - Worcester	508.792.7683
3-xxxxxx	Northeast - Wilmington	978.661.7600
4-xxxxxx	Southeast - Lakeville	508.946.2835

Interested parties are encouraged to visit DEP's region specific web site for

further information at the following address: <http://mass.gov/DEP/dephome.htm>

Additional general information on the DEP's audit program can be found on our web page at the following address: <http://mass.gov/dep/bwsc/audits.htm>.

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# waste site cleanup

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## Audit Update for October, November, and December 2002

DEP auditing now includes three types of audits commonly referred to as Level I, Level II, and Level III audits, which were the result of refinements made to the DEP Audit Program between 1999 and 2002. Level I audits are file review audits of submittals using technical checklists developed by DEP. These checklists are available to the public at:

<http://www.state.ma.us/dep/bwsc/files/audits/screen.htm>. Level II audits include focused reviews and site inspections of ongoing assessment and remediation activities as well as Activity & Use Limitation (AUL) obligation and maintenance conditions. Level III audits include comprehensive reviews of all response actions conducted at a site and a site inspection.

### Level II Audits for October, November, and December 2002:

DEP completed Level II audits and issued Notice of Audit Findings (NOAFs) at 52 sites between October, November, and December 2002. Eighteen Notice of Noncompliance's (NONs) were issued together with DEP's findings. Level II audits of interest in October, November, and December 2002 include:

1. Following a LII audit of the obligation and maintenance conditions associated with an AUL, DEP issued a NOAF/NON for failure to maintain the pavement as the AUL required. During an inspection by DEP, holes were observed in the existing pavement; another portion of the AUL area was unpaved. DEP required that all unpaved holes and areas be paved within 45 days. (Worcester, RTN 2-0190, NON-CE-02-3067, November 14, 2002)
2. Following a LII audit of a remedial system implemented and operating at a site in accordance with an approved Immediate Response Action (IRA) Plan and subsequent addenda, DEP issued an NOAF/NON for failure to routinely inspect the treatment system. During an inspection of the site, a review of IRA documents along, and telephone conversations with the consulting firm staff, DEP

determined that compliance with the written IRA approval was conditioned with a provision for a Wastewater Treatment Plant Operator as required by 310 CMR 40.0041(9). DEP requested documentation detailing the employment or engagement of a Grade 2 licensed Wastewater Treatment Plant Operator within 30 days. (Hanover, RTN 4-13168, NON-SE-02-3A-039, November 19, 2002)

3. Following a LII audit of a Phase IV Remedy Implementation Plan (RIP), DEP issued a NOAF indicating that no violations of the requirements applicable to the installation, operation, and maintenance of the remedial alternative at the site. The installed remedial system included soil vapor extraction (SVE) with air sparging. The system was in operation during the inspection. Off-gas treatment control devices were determined to be achieving 95% reduction. (Westport, RTN 4-1276, December 9, 2002)

4. Following a LII audit of a Phase IV RIP and Phase IV Final Inspection Report (FIR) and Completion Statement, DEP issued an NOAF/NON for violations of the Operation, Maintenance, and Monitoring (OMM) Plan. DEP's inspection of the system determined that the off-gas control system was not being monitored in accordance with the OMM Plan. As a result of the audit, system monitoring was established and no further corrective actions were required by DEP. (Plainville, RTN 4-0708, NON-SE-02-3A-034, December 31, 2002)

### **Level III Audits for October, November, and December 2002:**

DEP completed Level III audits and issued NOAFs at 51 sites between October, November, and December 2002. Thirty NONs were issued with DEP's findings. Level III audits of interest in October, November, and December 2002 include:

1. A release of gasoline and waste oil from underground storage tanks (USTs) resulted in a release to soil and groundwater at a commercial site. Residential properties are located approximately 80 feet downgradient of the site. An Immediate Response Action (IRA) and Release Abatement Measure (RAM) were conducted to address the release. Response actions included the removal of USTs, the removal of 536 tons of petroleum contaminated soils, soil boring and monitoring well installations, and soil and groundwater sampling. A Class A-2 Response Action Outcome (RAO) was submitted to DEP. DEP issued a NOAF/NON for the site and concluded that additional groundwater investigations were warranted. DEP noted that pre-RAM excavation groundwater data from four source area monitoring wells revealed the presence of non-aqueous phase liquid (NAPL) and several Extractable Petroleum Hydrocarbon (EPH) and Volatile Petroleum Hydrocarbon (VPH) fractions in exceedance of applicable Method 1 risk characterization GW-2 standards. Soil excavation activities did not include dewatering, and three source area monitoring wells were destroyed. However, only one round of post-

excavation groundwater data was collected from the remaining wells and used to evaluate risk, an amount at locations that were considered to be insufficient by DEP based on the proximity to nearby residential receptors. (Leominster, RTN 2-12698, NON-CE-02-3085, October 10, 2002).

2. A historic release of chlorinated solvents at an automotive garage resulted in a release to groundwater. The site is located within a Zone II area for an inactive community water supply well. Assessment of the site began in 1991 with the installation of three monitoring wells. The detection of elevated levels of vinyl chloride in August 1998 resulted in a notification to DEP. Additional IRA assessment activities were conducted and a Class B-2 RAO Statement and Activity & Use Limitation (AUL) were submitted to DEP in December 1998. DEP issued a NOAF/NON, concluding that the RAO submittal was not valid and that additional response actions were required. DEP found that the applicable Method 1 GW-1 standard was exceeded, a Massachusetts Drinking Water Standard was exceeded, a Method 2 standard was improperly calculated, and an AUL was improperly used to restrict groundwater in a Zone II. (Burlington, RTN 3-17237, NON-NE-02-3A-111, October 15, 2002).

3. A release of waste oil and chlorinated degreasing compounds from a dry well was identified at an automotive sales property. Assessment and remediation activities were conducted, including the removal of the drywell and excavation of approximately 36 cubic yards of impacted soil. Post-excavation soil samples were collected and five groundwater-monitoring wells were installed and sampled. Groundwater was classified as GW-2 and GW-3. A Class A-2 RAO with a Method 1 risk characterization was submitted to DEP. DEP issued a NOAF/NON concluding that the RAO submittal was not valid and that additional response actions were required. DEP found that the groundwater should have been classified as GW-1 due to the site's location within a medium yield aquifer that is a potential drinking water source area; and concentrations of tetrachloroethene (PCE) in groundwater samples from one monitoring well were above the Method 1 standard for GW-1. In addition, analytical detection limits for two compounds were above Method 1 GW-2 standards, and therefore, those data cannot be used to determine whether GW-2 standards for these compounds were met. (Bernardston, RTN 1-13821, NON-WE-02-3A113, November 26, 2002).

4. A release was identified during the removal three gasoline USTs, one diesel UST, one fuel oil UST, and one used oil UST at an automotive service station property. An IRA was completed and included the excavation and removal of approximately 390 cubic yards of soil. Soil and groundwater were sampled for EPH/VPH. A tier IC Classification and associated permit was submitted to DEP on January 4, 2001. DEP issued a NOAF/NON, which required



additional sampling of all private wells within 500 feet of the site. DEP noted that concentrations of VPH fractions including target analytes were detected above the applicable Method 1 GW-1 standards with several private wells present within 500 feet of the site. DEP determined that the wells should be sampled to continually assess and evaluate the release for IRA conditions. (Stow, RTN 2-12504, NON-CE-02-3088, December 23, 2002).

Additional general information on the DEP's audit program can be found on our web page at the following address: <http://mass.gov/dep/bwsc/audits.htm>.

### Helpful Hint

Please be aware that an AUL Transmittal Form, BWSC-113, must accompany all AUL submittals. This includes AUL Ratifications and AUL Amendment and Ratifications being made for AUL corrections required on AULs submitted on or before October 29, 1999. The transmittal form, which is dated May 1995, does not include check blocks for each type of AUL corrective document. For all corrective documents, check the block for an Amended Notice of Activity and Use Limitation in Part B. You may cross out the reference to 40.1084(1) if it is not applicable to the document being submitted. For all terminations, check the third block. If the submittal is a partial termination or release, please type this into the box for Part B. If the AUL submittal was required by a NON issued as part of a Notice of Audit Findings, Form BWSC-111 is also required.

Completing the DEP transmittal form for all submittals will ensure that your submittal is on file at DEP.

In addition, prior to submission of any AUL, DEP strongly recommends completion of the AUL Compliance Assistance Checklist located at: <http://www.state.ma.us/dep/bwsc/files/audits/aul1999check.pdf>

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